Android Project: Fitness Centre Booking App

SEG 2105[A] – Intro to Software Engineering – Fall 2021

Final Report

Group #11

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Introduction

Throughout the semester, our group of five students have been working hard on developing an Android application for a fitness centre. To make it, we used the development environment provided by Android Studio. Our interfacing, or front-end, was written in .xml code with the help of the Android Studio development tools. The back end of the project was written in Java, for co-ordinating function of the buttons used in the .xml files, and for receiving and sending data to our database. To store account information, we used Firebase for database support.

Our application has sign-in and sign-up buttons as soon as you open the app. To access the application, one must sign in with an account. Signing up is easy, and the accounts login details are stored in the Firebase online database on creation. There are three types of accounts with different permissions and functions. The first is the member type account. A member can view all available fitness classes and can also search for specific classes using the class name, or the day of the week that the class is offered. Members can also enroll into any class of their interest, so long as there is no time conflict with other classes that they've previously enrolled in and that it is not full. Members may also view a list of all the classes that they are currently enrolled in.

The second type of account is an instructor account. They can view all currently scheduled fitness classes, as well as scheduling their own. Instructors set difficulty level, day of the week, a time interval, and a maximum capacity for any of their created classes. They are also allowed to edit or delete their own scheduled classes.

An admin account is not able to be created, and was instead created by us, the developers, for admin usage. Admins may create, edit, and delete classes, and may also delete both instructor and member accounts created by any user.

Overall, our group feels like we have learned a lot through the development of this project. We learned and improved many new skills working with the Android Studio development environment. Using constraints, margins, and coding functions for buttons are some of the things we have learned throughout the semester working on this project together, but the most important thing we developed was our collaboration skills. Working on a software-based project as a group over GitHub is never easy, however we constantly communicated with each other and all worked hard on our designated parts, helping each other whenever we could, which let us achieve success.

UML Class Diagram

Figure 1 – UML Class Diagram for entire project

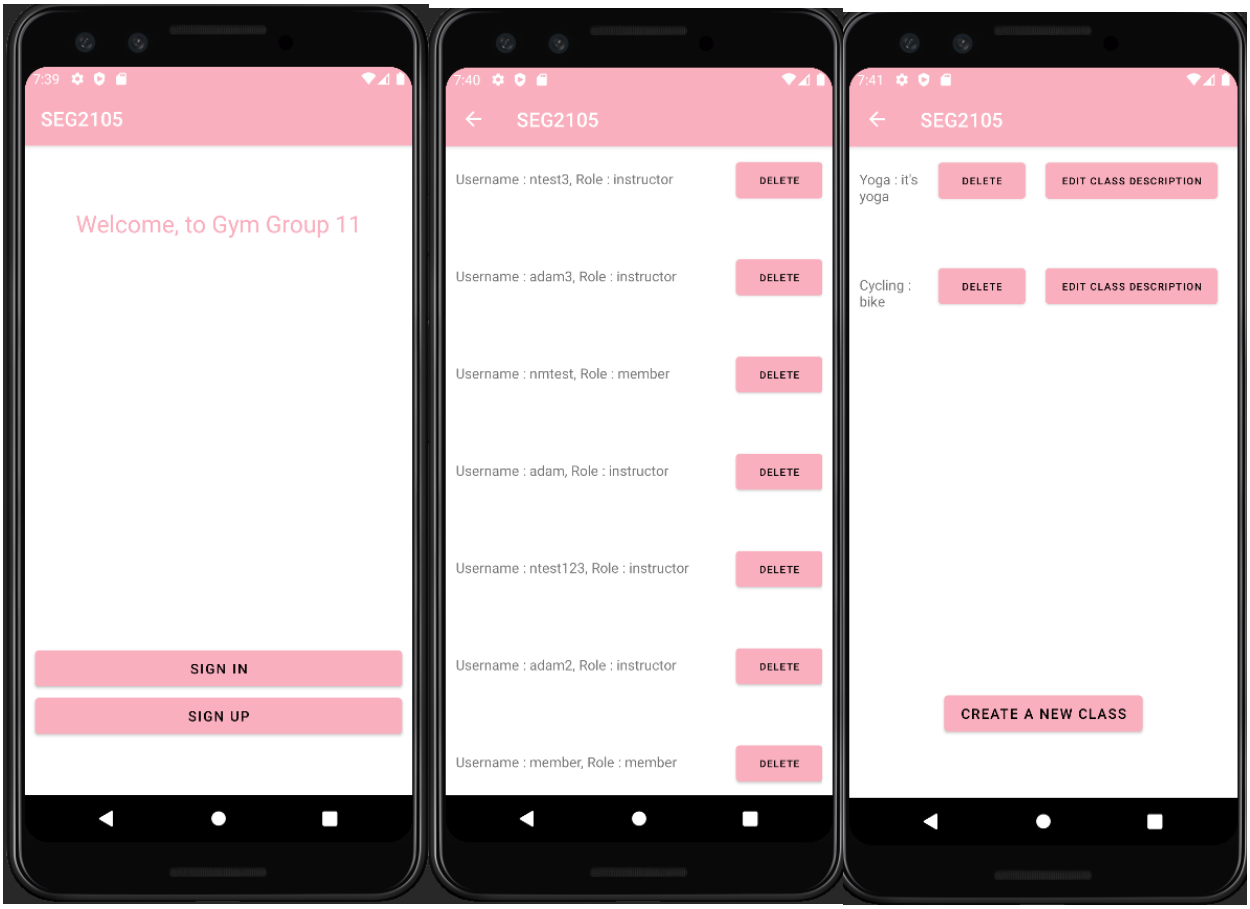
(We know this is illegible, please view the full .png in our GitHub repository)

Roles & Contributions

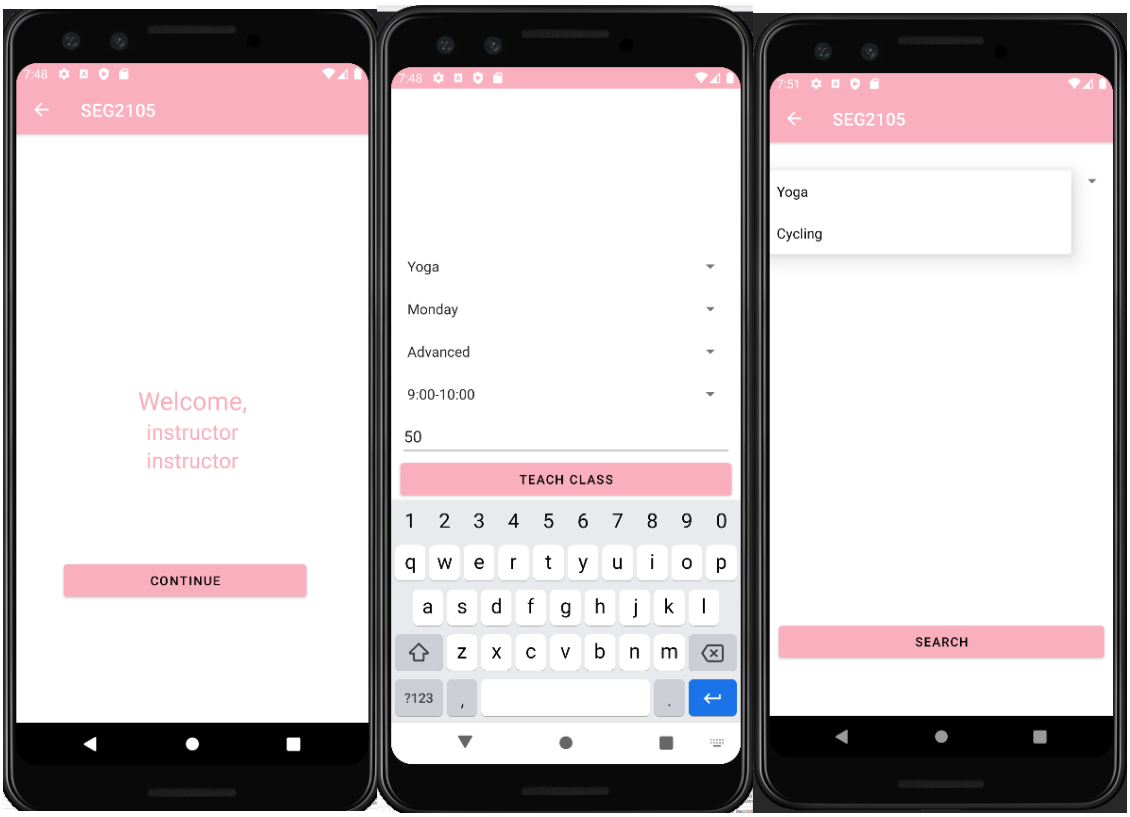
Student	Role	Deliverable 1	Deliverable 2	Deliverable 3
Adam J	Main Coder	Lots of coding	Lots of coding	Lots of coding
Ashton H	Coding/Support	UML diagram	Coding support	Lots of coding
Noah T	Coding/Support	UML diagram	Coding support/UML support	Lots of coding
Pablo S	Interfacing	Interface	Interface/JUnit	Interface/JUnit
Raymond M	Planning/Support	Coding support	Minor coding/UML diagram	UML diagram/report

Table 1 – Table of contributions and roles of each group member

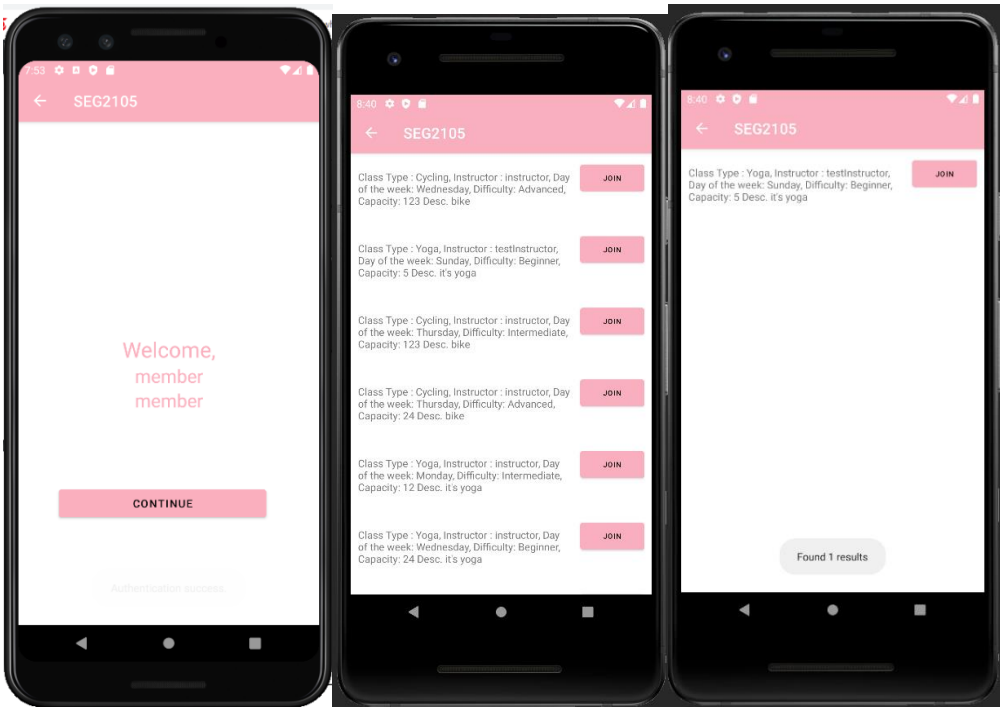
Screenshots of the Application



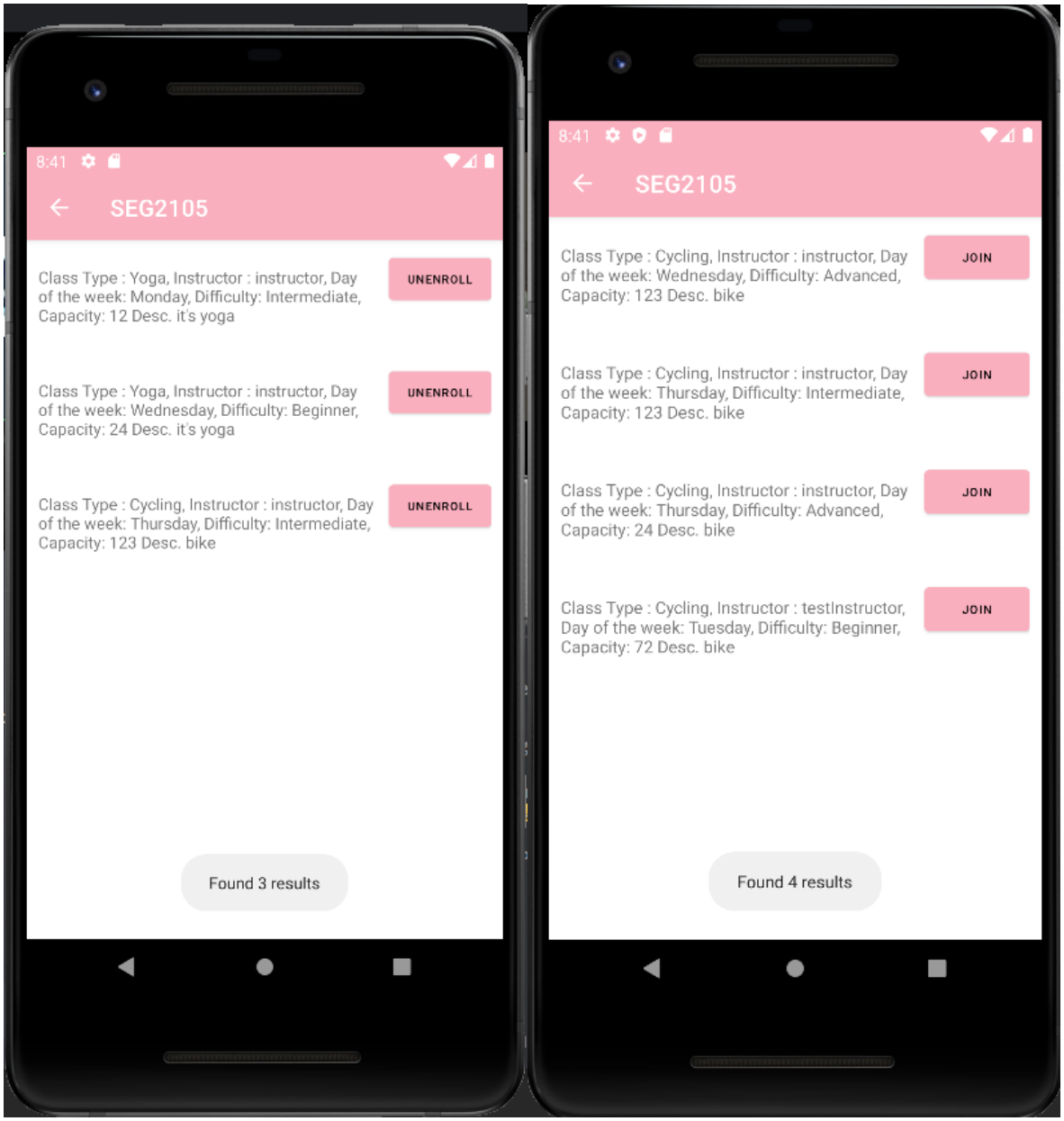
Figures 2, 3, and 4 – The welcome page, the admin's view of all users and classes



Figures 5, 6, and 7 – The welcome page for the instructor, the interface for an instructor to create a class, and the search by class name for the instructor



Figures 8, 9, and 10 – Member's welcome page, view classes, and search class by day



Figures 11 and 12 – Searching by class name and viewing enrolled classes for the member

Challenges Overcome

As a group working together online to develop an app, with many of us having had no prior experience with Android Studio, we faced many challenges. Knowledge based challenges are a given, for example, trying to create a function for a button and having no idea how to even begin coding it can be a huge obstacle to even think about surpassing. But, with help from the labs, YouTube videos, and each other we managed to create everything we needed to.

One of the more annoying challenges involved the way Java and Firebase handled asynchronous calls. Essentially, every time an asynchronous communication was held with the database, a new thread would have to be created. However, once a new thread was created, it would also communicate with the Java user interface thread. Our solution to the problem was to either provide the function with proper context or use custom call backs in our functions.

An obvious challenge affecting most, if not, all groups is the fact that we must coordinate at a distance. Due to the COVID situation, our group chose to coordinate through primarily Discord, an app allowing for audio calls with screen share, as well as text chats and ability to send files < 8MB to each other. Despite having an obstacle like this, our group communicated very well, constantly sending messages and reminders to each other for tasks that had to be completed, or about when the next group call would take place. Communication was easy with Discord but having a lack of in-person interaction lowered our motivation as a group. Being able to work side by side in-person and help each other would have definitely boosted productivity and helped keep us on-task.

Overall, our group is satisfied with what we managed to produce together. Some of us met each other for the first time at the start of this semester, and some of us had no experience with Android Studio's development environment prior to this course. Even in the face of all this and our previously mentioned challenges, we still managed to collaborate extremely well and achieve success for this term project. We learned many new skills and improved existing skills working on this project, and we thank you for giving us the opportunity to develop this application together!